

In the Claims:

Please amend claims 1-3 and 10. Please cancel claims 11, 12 and 17-26, and add claims 27-42. Following is a complete listing of the claims pending in the application, as amended:

1. (Currently Amended) A processing apparatus for processing a microelectronic workpiece, comprising:

an in-line metrology unit having a space for receiving a microelectronic workpiece for measuring a condition of a first layer on said microelectronic workpiece and generating a condition signal;

a control, signal-connected to said metrology unit;

a process unit providing a space to receive said microelectronic workpiece and performing an electrochemical process that is controlled by said control;

and

a transport unit positioned to receive the microelectronic workpiece from at least one of the process unit and the in-line metrology unit and move the microelectronic workpiece to the other of the process unit and the in-line metrology unit.

wherein said condition signal from said metrology unit to said control influences said process.

2. (Currently Amended) The apparatus according to claim 1, further comprising a non-compliance unit, and ~~a microelectronic workpiece wherein the transport unit is~~ signal-connected to said control, further wherein said condition signal from metrology unit influences said control to cause said ~~microelectronic workpiece transport unit~~ to transfer the microelectronic workpiece to said noncompliance unit.

3. (Currently Amended) The apparatus according to claim 1, wherein said first layer comprises a seed layer, and ~~further comprising wherein the process unit includes~~ a seed layer enhancement unit, and a microelectronic workpiece wherein the

transport unit is signal-connected to said control, wherein said condition signal from said metrology unit influences said control to cause said ~~microelectronic-workpiece~~ transport unit to transport a microelectronic workpiece to said seed layer enhancement unit.

4. (Original) The apparatus according to claim 1, wherein said process unit comprises an electroplating reactor having at least one anode and a workpiece holder to hold a microelectronic workpiece as cathode, and said process is dependent on the current between said anode and said cathode, said control adjusting said current in response to said condition signal.

5. (Original) The apparatus according to claim 4, wherein said condition signal is representative of a thickness of a seed layer applied onto said microelectronic workpiece.

6. (Original) The apparatus according to claim 4, wherein said electroplating reactor comprises a plurality of anodes and said control adjusting current between each anode and said cathode.

7. (Original) The apparatus according to claim 1, wherein said process unit comprises a chemical mechanical polishing tool.

8. (Original) The apparatus according to claim 1, wherein said process unit comprises a chemical mechanical polishing tool, and said first layer comprises a layer on said workpiece just prior to chemical mechanical polishing by said chemical mechanical polishing tool.

9. (Original) The apparatus according to claim 1, wherein said process unit comprises a chemical mechanical polishing tool, and said first layer comprises a layer

on said workpiece just after chemical mechanical polishing by said chemical mechanical polishing tool.

10. (Currently Amended) The apparatus according to claim 1, wherein the metrology unit is configured to measure a thickness of a seed layer and measure a thickness of a process layer deposited on the seed layer~~said process unit comprises a photoresist exposure tool.~~

11-12. (Cancelled)

13. (Original) A method of processing a microelectronic workpiece, comprising the steps of:

providing two processing tools each of which further processes a microelectronic workpiece in a preselected process;

using an in-line metrology unit, determining a condition of a layer on said microelectronic workpiece at one of the tools; and

in response to a signal from the metrology unit, modifying a process parameter in the respective other tool.

14. (Original) The method according to claim 13, comprising the further step of providing a third process tool in a preselected process order with respect to the two consecutive processing tools, and modifying process parameters in said third processing tool in response to said signal from said metrology unit.

15. (Original) The method according to claim 13, wherein said microelectronic workpiece is processed first in said one processing tool and subsequently in said respective other processing tool.

16. (Original) The method according to claim 13, wherein said microelectronic workpiece is processed first in said respective other processing tool and subsequently in said one processing tool.

17-26. (Cancelled)

27. (New) An apparatus for processing a microelectronic workpiece, comprising:

- a metrology unit having a space for receiving a microelectronic workpiece, the metrology unit being configured to measure a condition of at least one conductive layer of the microelectronic workpiece and generate a condition signal representative of the condition;
- an electrochemical processing unit having a space to receive the microelectronic workpiece, the electrochemical processing unit being configured to apply a conductive material to the at least one conductive layer; and
- a control unit operatively coupled between the metrology unit and the electrochemical processing unit to receive the condition signal from the metrology unit and transmit a control signal, the control signal influencing at least one of a manner in which the conductive material is applied to the at least one conductive layer of the microelectronic workpiece and a sequence of processes performed on the microelectronic workpiece.

28. (New) The apparatus of claim 27 wherein the at least one conductive layer includes a generally continuous seed layer and wherein the metrology unit is configured to generate a condition signal representative of a thickness of the seed layer.

29. (New) The apparatus of claim 27, further comprising a material deposition unit configured to apply the at least one conductive layer to the microelectronic workpiece.

30. (New) The apparatus of claim 27 wherein the metrology unit is configured to detect a condition of the at least one conductive layer, with the at least one conductive layer applied to the microelectronic workpiece external to the apparatus.

31. (New) The apparatus of claim 27 wherein the electrochemical processing unit has a plurality of electrodes and wherein the control unit is operatively to the electrodes to control a current applied to at least one of the electrodes based on the condition signal.

32. (New) The apparatus of claim 27 wherein the metrology unit and the electrochemical processing unit are housed in a single tool.

33. (New) The apparatus of claim 27 wherein the metrology unit and the electrochemical processing unit are virtually coupled.

34. (New) The apparatus of claim 27 wherein the metrology unit and the electrochemical processing unit are housed in separate tools.

35. (New) The apparatus of claim 27 wherein the control signal influences a uniformity with which the conductive material is applied.

36. (New) An apparatus for processing a microelectronic workpiece, comprising:

- a metrology unit having a space for receiving a microelectronic workpiece, the metrology unit being configured to measure a condition of at least one conductive layer of the microelectronic workpiece and generate a condition signal representative of the condition;
- a processing unit having a space to receive the microelectronic workpiece, the processing unit being configured to perform a process on the at least one

conductive layer of the microelectronic workpiece, the process including at least one of a repair process and an enhancement process; and a control unit operatively coupled between the metrology unit and the processing unit to receive the condition signal from the metrology unit and transmit a control signal to the processing unit to influence at least in part the process performed by the processing unit.

37. (New) The apparatus of claim 36 wherein the at least one conductive layer includes a generally continuous seed layer and wherein the metrology unit is configured to generate a condition signal representative of a thickness of the seed layer.

38. (New) The apparatus of claim 36, further comprising a material deposition unit configured to apply the at least one conductive layer to the microelectronic workpiece.

39. (New) The apparatus of claim 36 wherein the metrology unit is configured to detect a condition of the at least one conductive layer, with the at least one conductive layer applied to the microelectronic workpiece external to the apparatus.

40. (New) The apparatus of claim 36 wherein the electrochemical processing unit has a plurality of electrodes and wherein the control unit is operatively to the electrodes to control a current applied to at least one of the electrodes based on the condition signal.

41. (New) The apparatus of claim 36 wherein the metrology unit and the electrochemical processing unit are housed in a single tool.

42. (New) The apparatus of claim 36 wherein the metrology unit and the electrochemical processing unit are virtually coupled.